N00174.AR.000878
NSWC INDIAN HEAD
5090.3a

PUBLIC NOTICE REGARDING PROPOSED PLAN SITE 47 MERCURIC NITRATE DISPOSAL AREA NAS INDIAN HEAD MD
4/1/2012
NAS INDIAN HEAD

Proposed Plan

Site 47, Mercuric Nitrate Disposal Area

U.S. Navy Announces the Site 47 Proposed Plan

Naval Support Facility Indian Head

Indian Head, Maryland

April 2012

Introduction

This **Proposed Plan**[1] presents the remedial alternatives evaluated and recommended to address contaminated shallow **groundwater** at Site 47, Mercuric Nitrate Disposal Area, at Naval Support Facility Indian Head (NSF-IH) in Indian Head, Maryland (Figure 1). This Proposed Plan recommends ***in situ* chemical oxidation (ISCO)** in the area where the carbon tetrachloride (CT) and tetrachloroethene (PCE) concentrations exceeds 500 micrograms per liter (µg/L), **monitored natural attenuation (MNA)** in the remaining area where the **site remediation goals (SRGs)** are exceeded, and **institutional controls (ICs)** prohibiting residential development at the site and any use of the shallow groundwater until the SRGs are met, and restricting intrusive activities such as excavation. For surface soil, subsurface soil, surface water, and sediment, this Proposed Plan recommends no further remedial action. Based on the human health and ecological risk assessments performed during the **Remedial Investigation (RI)** and **Baseline Ecological Risk Assessment (BERA)**, no **contaminants of concern (COCs)** were identified for surface soil, subsurface soil, surface water, and sediment.

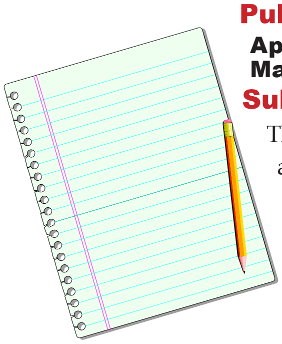
This Proposed Plan provides the rationale for the recommendations, based on investigative activities performed at Site 47 to date, and explains how the public can participate in the decision-making process.

The Department of the Navy (Navy), the lead agency for the site activities, and the U. S. Environmental Protection Agency Region III (EPA), in consultation with the Maryland Department of the Environment (MDE), issue this document as part of the public participation requirements under Section 117(a) of the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** and Title 40 of the Code of Federal Regulations (CFR), Section 300.430(f)(3). Title 40 CFR Part 300 is known as the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)**. This Proposed Plan summarizes information that can be found in greater detail in the RI report, **Feasibility Study (FS)** report, and other documents contained in the **Administrative Record File** for this site.

---

[1] A glossary of specialized terms used in this Proposed Plan is attached. Words listed in the glossary are indicated in **bold print** the first time they appear in this Plan.

Mark Your Calendar for the Public Comment Period



Public Comment Period

April 12, 2012 through May 14, 2012

Submit Written Comments

The Navy, EPA, and MDE will accept written comments on the Proposed Plan during the public comment period. To submit comments or obtain further information, please refer to the insert.

Attend the Public Meeting

April 12, 2012 from 6:00 P.M. to 7:00 P.M.

Indian Head Senior Center
100 Cornwallis Square
Indian Head, MD 20640

The public comment period will include a public meeting during which the Navy, EPA, and MDE will provide an overview of the site, previous investigation findings, remedial alternatives evaluated, and the Preferred Alternative, answer questions, and accept public comments.

Location of Information Repository

The Information Repository is available for public viewing at the following locations:

Indian Head Town Hall
4195 Indian Head Hwy.
Indian Head, MD 20640
(301) 743-5511

Hours: Monday through Friday 8:30 a.m. to 4:30 p.m.

Charles County Public Library
2 Garrett Ave.
La Plata, MD 20646-5959
(301) 934-9001 * (301) 870-3520

Hours: Monday through Thursday 9 a.m. to 8 p.m.
Friday and Sunday 1-5 p.m.
Saturday 9 a.m. to 5 p.m.

Naval Support Facility Indian Head
General Library
Building 620 (The Crossroads)
101 Strauss Avenue, Indian Head, MD

Hours: M-F 9:00 a.m. – 5:30 p.m.
Sat/Sun - closed

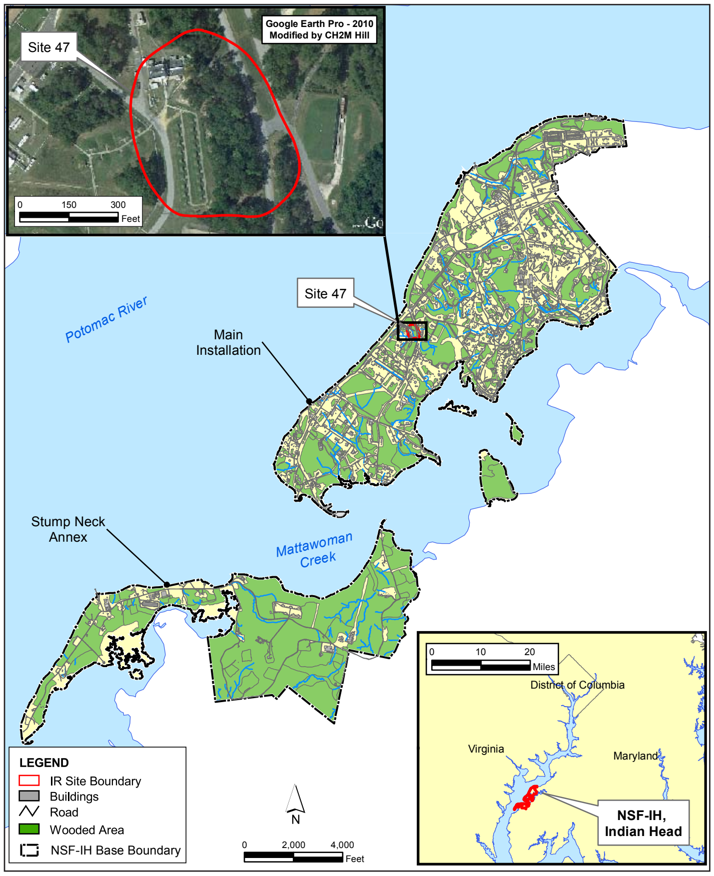


Figure 1 - NSF-IH Facility Map and Site Layout

The Navy and EPA, in consultation with MDE, will make a final decision on the **response action** for the site after reviewing and considering all information submitted during the 30-day public **comment period**, and may modify the preferred response action or select another action based on any new information or public comments. Therefore, community involvement is critical, and the public is encouraged to review and comment on this Proposed Plan. After the public comment period has ended and the comments and information submitted during that time have been reviewed and considered, the Navy and EPA, in consultation with MDE, will document the action selected for the site in a **Record of Decision (ROD)**.

Site History

Site 47 (Mercuric Nitrate Disposal Area) is in the central portion of NSF-IH. Mercuric nitrate was used in Building 856 as a catalyst in the production of missile propellant. The disposal area encompassed about 24 square feet (4 feet by 6 feet) and was located on the west bank of the drainage ditch near the southeast corner of the building. Mercuric nitrate was reportedly disposed from 1957 to 1965 (Naval Energy and Environment Support Activity [NEESA], 1992). The disposal site was covered with limestone chips to provide neutralization for the spent catalyst. Evidence of the disposal area no longer exists. CT was used at the site, presumably as an inerting agent to keep the explosives dry and may have been poured into drains or stored in leaky drums (CH2M HILL, 2003).

Site Characteristics

Soil at Site 47 consists of sand and silty sand from the ground surface to an approximate depth of 7 and 24 feet below ground surface (bgs), depending on the surface elevation and location. Underlying the sand and silty sand is a dense, gray clay that appears to be more than 30 feet thick. The water table elevation ranges from 34.4 feet to 37.0 feet above mean sea level. Groundwater flows across the site to the southeast toward the Site 12 Pond and Mattowoman Creek.

Environmental Investigation History

Several investigations were conducted at Site 47 between 1992 and 2010. Below is a chronological summary of these investigations.

Preliminary Assessment

The objective of the Preliminary Assessment (PA) (NEESA, 1992) was to document past and present operations and disposal practices at several sites and recommend further action if there was a potential threat to human health or the environment. The PA concluded that, depending on soil characteristics and solubility of the mercuric nitrate and its salt precipitate, mercury may have leached into the shallow groundwater at the site. The PA recommended a Site Inspection (SI) to include soil sampling for Site 47.

Site Inspection

The objective of the SI was to determine if contamination was present in soil at Site 47 (Ensafe/Allen & Hoshall, 1994). Twelve soil samples were collected from locations near the former mercury disposal pit at Site 47. The sampling results did not conclusively identify the location of the former mercuric nitrate disposal pit. It was recommended that an additional study be conducted to evaluate the nature and extent of contamination from **volatile organic compounds (VOCs)**, **semivolatile organic compounds (SVOCs)**, and metals.

Remedial Investigation

The RI for Site 47 was performed in several phases, from 1999 to 2002 (CH2M HILL, 2003). The objectives were to: 1) determine the geologic and hydrogeologic characteristics of the area underlying and surrounding the site; 2) characterize the nature, extent, and concentrations of site-related contaminants in concrete troughs, surface soil, sediment, and groundwater, and determine the rate of migration of site-related contaminants in the environment; and 3) identify actual or potential human or environmental receptors and potential contaminant migration pathways. Figure 2 shows the RI sampling

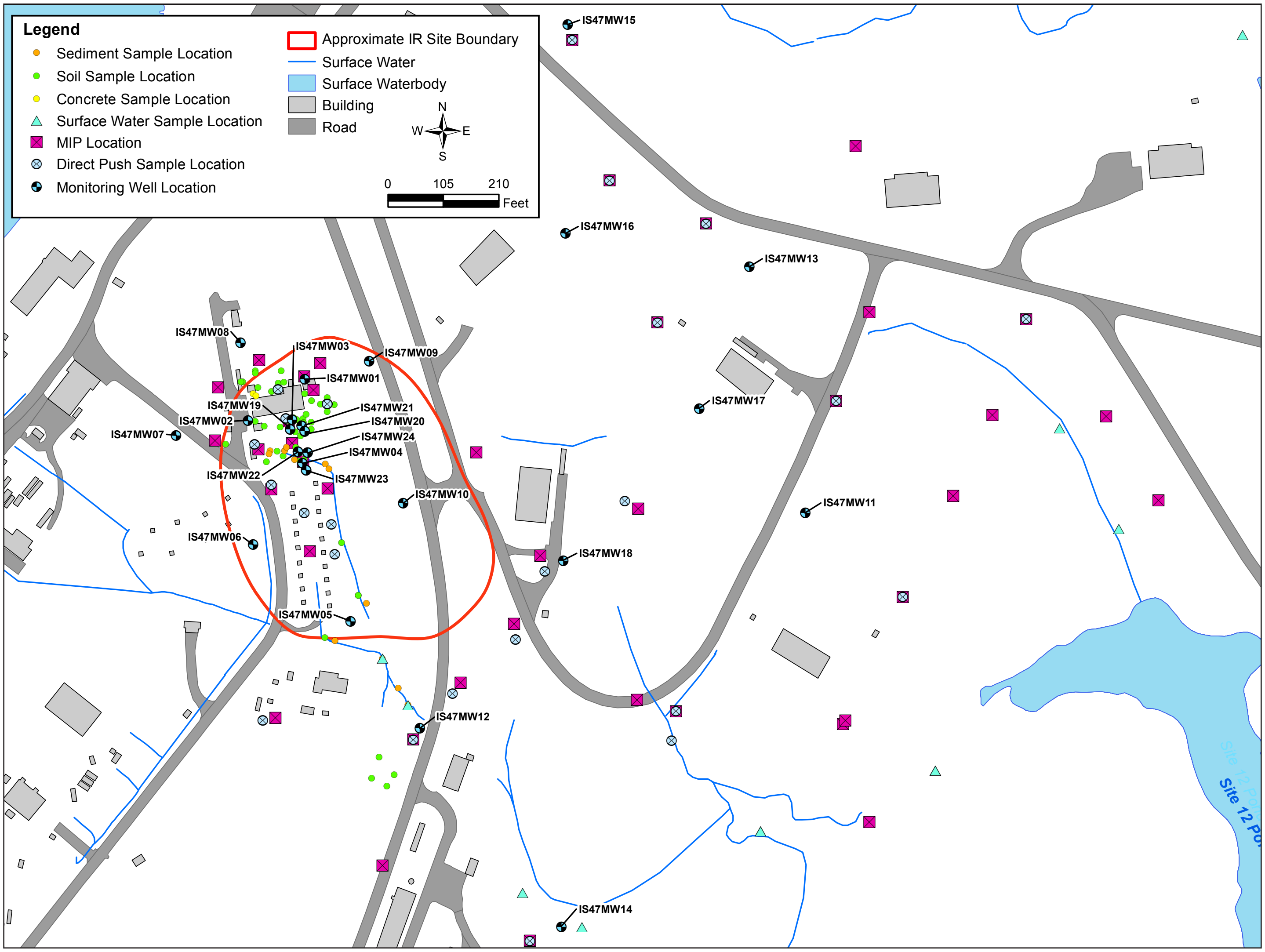


Figure 2 - RI and Pre-FS Investigation Sampling Locations

locations. The sampling program and analytical results are summarized below.

Surface Soil: A total of 21 samples were collected and analyzed for **Target Compound List (TCL)** VOCs, SVOCs, and **Target Analyte List (TAL) inorganics**. Several samples were also analyzed for explosives, low concentration (LC) polycyclic aromatic hydrocarbons (PAHs), total organic carbon (TOC), and perchlorate.

Detected VOCs consisted of chloroform (CF), CT, trichloroethene (TCE), and PCE in 12 samples. One or more SVOCs were detected at low concentrations. Metals were detected in all samples, with lead, mercury, and silver being the most commonly detected and at concentrations above the facility-wide **background** concentrations. A few explosives were detected at low concentrations in four samples.

Subsurface Soil: A total of 19 subsurface soil samples were collected; 14 shallow samples were collected from 2 to 3 feet bgs and 5 deep samples were collected from 8 feet bgs. Of the 14 shallow subsurface samples, 4 were analyzed for TCL VOCs, TCL SVOCs, and TAL metals and cyanide; 6 were analyzed for TOC; and 4 samples were analyzed for TCL VOCs, TCL SVOCs, TAL metals, explosives, perchlorate, and TOC. The five deep subsurface soil samples were analyzed for TCL VOCs and TAL metals.

Low concentrations of VOCs (methylene chloride, PCE, and TCE) were detected in three samples. Low concentrations of one or more SVOCs were detected in six samples. Several metals were detected at concentrations above their respective background 95 percent **upper confidence limit (UCL)**.

Concrete: Two samples were taken within concrete surface conduits from Building 856 to Building 856A to assess potential contamination of the conduits. The samples were analyzed for TCL SVOCs, TAL inorganics, and explosives. SVOCs and explosives were not detected in the samples. Several metals were detected at low concentrations.

Surface Water: A total of 13 surface water samples were collected at Site 47. Two samples were analyzed for TCL VOCs and SVOCs, TAL metals and cyanide, perchlorate, TOC, and hardness; seven samples were analyzed for TCL VOCs; and four samples were collected at the unnamed swale and the Site 8 swale and analyzed for LC VOCs.

Low concentrations of VOCs (acetone and bromodichloromethane) were detected in 2 of 11 samples. Similarly, detection of SVOCs was limited to low concentrations of bis(2-ethylhexyl)phthalate and di-n-butyl phthalate in the two samples analyzed for SVOCs. Metals were analyzed in two surface water samples, but were detected at very low concentrations.

Sediment and Sewer Sediment: Six sediment samples and one sewer sediment sample (from sewer manhole) were collected and analyzed for TCL VOCs and TCL SVOCs. Several samples were analyzed for TAL metals, explosives, nitroglycerin, nitroguanidine, pentaerythritol tetranitrate, cyanide, and TOC.

The only VOC detected was TCE; it was detected at a low concentration in one sediment sample. Several SVOCs [benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene , and pyrene] were observed at high concentrations in four samples, which were collected in the drainage swale near Building 856. Several metals were detected at low concentrations in the sediment samples. Explosives detection was limited to low concentrations of nitroguanidine in three samples.

Groundwater: For **groundwater** characterization, three types of sampling methods were used: **membrane interface probe (MIP)/electrical conductivity (EC)**, **direct-push technology (DPT)**, and permanent monitoring wells. The MIP/EC investigation was conducted in three phases. The MIP was used to better define the area of VOC contamination and to identify the locations of the permanent monitoring wells. The EC of the soil was measured to assess the subsurface lithology. A total of 31 MIP/EC locations were profiled.

In addition, a total of 40 *in situ* groundwater samples were collected using DPT; 30 samples were analyzed for TCL VOCs, 10 samples for LC VOCs, and 12 samples for dissolved TAL metals. Fifteen permanent monitoring wells (IS47MW01 through IS47MW15) were installed. Samples were collected from these wells during multiple events between July 1999 and September 2002 and were analyzed for TCL VOCs and SVOCs, LC VOCs, TAL metals, cyanide, explosives, nitroglycerin, nitroguanidine, pentaerythritol tetranitrate, and MNA parameters.

High concentrations of chlorinated VOCs, specifically PCE, TCE , CT, and their respective breakdown products, as well as 1,2-dichloroethane (1,2-DCA), were detected. The concentrations of CT and PCE were at **dense non-aqueous phase liquid (DNAPL)** levels, indicating a potential source in the vicinity of Building 856. However, the lower concentration data from the downgradient wells of Building 856 suggested that residual DNAPL is likely confined within the source area. Figure 3 shows the interpreted plumes of PCE, TCE, and CT.

Thirteen metals were detected at concentrations above their respective background 95 percent UCL (Tetra Tech, 2002). In general, a high concentration of metals was observed in both total and dissolved samples in locations where concentrations of VOCs were elevated; this suggested potential metal mobilization from the aquifer materials because of the low pH and aquifer's reducing conditions.

Pre-FS Investigation

In 2004, a pre-FS investigation was conducted to further assess the viability of MNA as a remedial alternative for the shallow groundwater (CH2M HILL, 2008). Field activities included installation of three monitoring wells, collection and analyses of groundwater samples from five existing and three new monitoring wells for VOCs and MNA parameters, collection and analysis of groundwater samples from four monitoring wells for TAL metals/cyanide, performance of slug tests at two existing and one newly installed well to assess the horizontal and vertical hydraulic conductivities of the clay layer, and analysis of a soil sample for soil oxidant demand (SOD) to assess the viability of potassium permanganate as an ISCO reagent.

In general, the results indicated that MNA is a viable alternative for CT and its breakdown products, PCE, and TCE. The MNA parameters indicated a reducing condition of the shallow groundwater that would promote the mobilization of metals from the aquifer materials. The slug test resulted in a horizontal hydraulic conductivity range of 0.6 foot per day (ft/day) to 19.7 ft/day; vertical hydraulic conductivities from the clay layer ranged from 5.2×10^{-5} ft/day to 4.6×10^{-4} ft/day. The SOD results indicated that the SOD of soil at the site was too high, so the use of potassium permanganate would not be a viable ISCO technology.

BERA

A BERA was conducted in 2004 to further evaluate potential ecological risks from metals and PAH contamination in surface soil, sediment, and surface water in the intermittent streams at the site (CH2M HILL, 2006). The results showed that no unacceptable risk was associated with site-related chemicals in the surface soil, sediment, or surface water. Therefore, no further action was recommended with regard to ecological risks related to these media.

Bench-scale Studies

A bench-scale study was performed in 2007 to evaluate technologies including ISCO using alkaline-activated persulfate (AAP) and catalyzed hydrogen peroxide, and *in situ* chemical reduction using various particle sizes of zero valent iron. The bench-scale study concluded that AAP is the most effective treatment reagent for CT and PCE, reducing their concentrations by more than 98 percent.

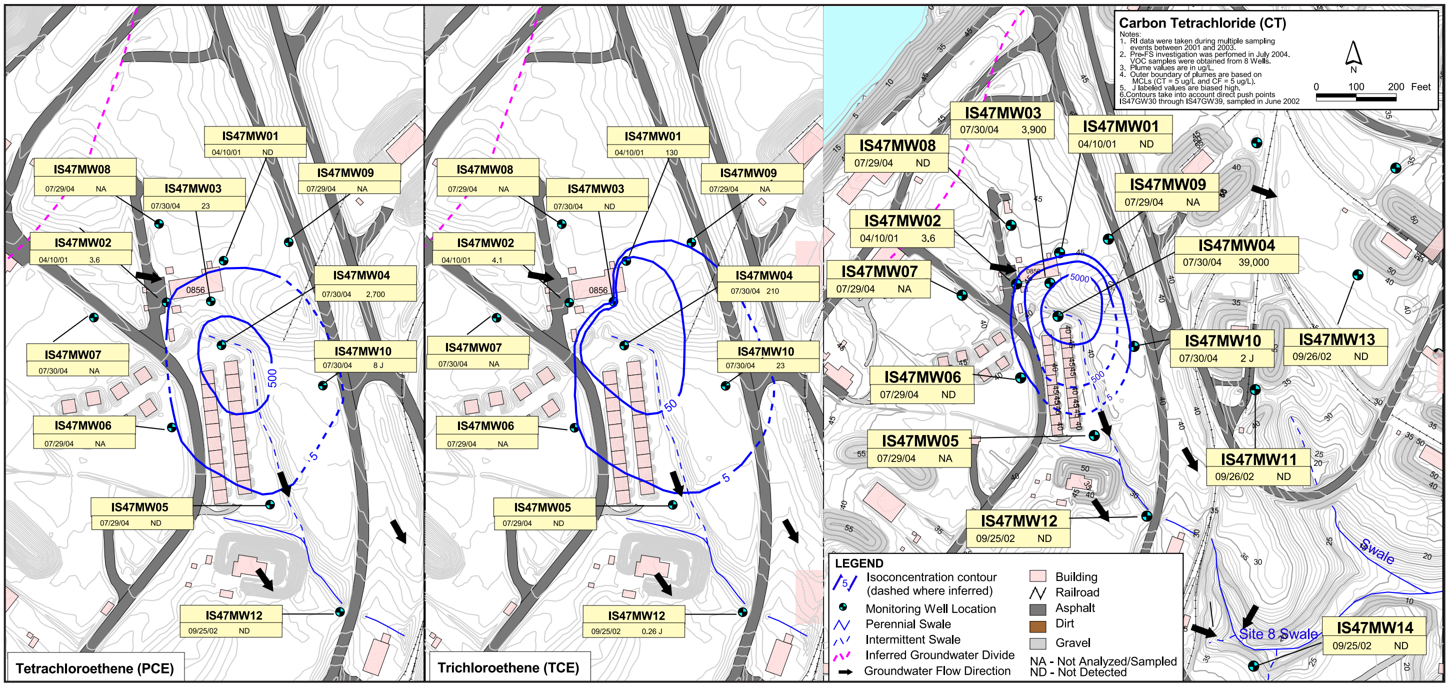


Figure 3 - Interpreted Plumes of PCE, TCE, and CT

FS

An FS was completed to address potential sources of contamination at Site 47 and to evaluate remedial alternatives to mitigate potential hazards associated with the shallow groundwater (CH2M HILL, 2008). These remedial alternatives are presented for public comment in this document.

Pilot Study

A pilot study was conducted in 2009 and 2010 to accomplish the following: (1) to develop the design parameters for full-scale implementation of AAP; (2) to assess potential impacts of AAP on current site uses (explosives research and storage area); and (3) to assess the compatibility of AAP with MNA. The pilot study area covered an area of approximately 3,500 square feet within the inferred DNAPL area (Figure 4). A total of 91,622 gallons of AAP, at concentrations ranging between 55 and 80 grams per liter, was injected into 14 pairs of shallow and deep injection wells (Figure 5). The AAP performance was evaluated after a baseline monitoring event and at 2-month and 6-month post-injection events. The over-all results indicated that AAP reduced CT and PCE concentrations over time. As of July 2010, CT and PCE concentrations in the saturated soil were reduced by approximately 90 percent and 61 percent, respectively; the reduction in CT and PCE concentrations in groundwater was observed to be 80 percent and 45 percent, respectively.

Principal Threats

The principal threat at Site 47 is the potential presence of CT and PCE at DNAPL concentrations in the shallow groundwater. A treatment option from the list of remediation alternatives will be used to eliminate this significant risk to human health. Principal threats are explained in the box above.

What is a "Principal Threat?"

The National Contingency Plan establishes an expectation that EPA will use treatment to address "principal threats" posed by a site wherever practicable [40 CFR Section 300.430 (a)(1)(iii)(A)]. The "principal threat" concept is applied to the characterization of "source materials" at a **Superfund** site. A source material is material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contamination to groundwater, surface water, or air, or acts as a source for direct exposure. Contaminated groundwater generally is not considered to be a source material; however, non-aqueous-phase liquids (NAPLs) in groundwater may be viewed as a source material. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of the alternatives using the nine remedy selection criteria. If, through this analysis, a treatment remedy is selected, then this selection is reflected in the Record of Decision, which will include a finding that the remedy uses treatment as a principal element.

Scope and the Role of the Action

This Proposed Plan addresses the evaluation of the preferred alternative for Site 47 only. It does not include or directly affect any other sites at the facility. The purpose of this Proposed Plan is to summarize activities performed to date to investigate Site 47 and provide a rationale for the proposed response action. The preferred remedy is ISCO in the area where CT concentration exceeds 500 µg/L, MNA in the remaining area where the SRGs are exceeded, and ICs prohibiting residential development at the site and any use of the shallow groundwater until the SRGs are met, and restricting intrusive activities such as excavation.

Summary of Site Risks

This section presents an overview of the risks associated with the current and future land uses of Site 47. A detailed discussion of potential risks at Site 47 and the risk evaluation process can be found in the *Final Remedial Investigation, Site 47 – Mercuric Nitrate Disposal Site, Naval Support Facility Indian Head (NSF-IH), Indian Head, Maryland* (CH2M HILL, 2003), *Final Baseline Ecological Risk Assessment, Site 47 NSF-IH, Indian Head, Maryland* (CH2M HILL, 2006), and *Final Site 47 Feasibility Study, NSF-IH, Indian Head, Maryland* (CH2M HILL, 2008).

Human Health Risks

As part of the RI, a baseline **human health risk assessment (HHRA)** was performed for exposure to surface soil, combined surface and subsurface soil, surface water, sediment, concrete trough, and groundwater at Site 47 to evaluate current and future effects of constituents in these site media on human health. The groundwater HHRA included groundwater samples collected using DPT methods. Groundwater collected via DPT does not meet the data quality objectives for an HHRA, and therefore should not be evaluated quantitatively in a baseline HHRA. Because the baseline HHRA included analytical results from DPT groundwater samples, the baseline HHRA presented in the final RI report does not accurately characterize potential current and future human health risks associated with contact with groundwater. Therefore, after the HHRA RI was completed and submitted, an additional HHRA was performed in 2004 for groundwater only as part of the pre-FS investigation and was documented in the FS (CH2M HILL, 2008). The discussion below on groundwater risks is based on the assessment conducted during the pre-FS, and not on the assessment performed as part of the 2003 RI. The text box to the right provides an explanation of the HHRA process.

Soil

The baseline HHRA performed during the RI evaluated the potential current and future risks associated with the presence of contaminants in surface soil and combined surface and subsurface soil on human health. The risk assessment initially screened the maximum detected concentration of each constituent against its respective EPA Region III residential soil **risk-based concentration (RBC)**, the current human health risk-based screening levels at the time the HHRA was completed, to identify the **contaminants of potential concern (COPCs)**. Potential risks associated with exposure to the COPCs were estimated for the receptors identified below.

- Surface Soil: For current or future uses – adolescent trespasser/visitor and industrial worker

  The HHRA evaluated exposure to surface soil via incidental ingestion, dermal contact, and inhalation of volatile and particulate emissions from the surface soil.

WHAT IS HUMAN HEALTH RISK AND HOW IS IT CALCULATED?

A human health risk assessment estimates “baseline risk.” This is an estimate of the likelihood of health problems occurring if no cleanup action were taken at a site. The Navy undertakes a four-step process to estimate baseline risk at a site:

Step 1: Analyze Contamination
Step 2: Estimate Exposure
Step 3: Assess Potential Health Dangers
Step 4: Characterize Site Risk

In Step 1, the Navy looks at the concentrations of contaminants found at a site as well as past scientific studies on the effects these contaminants have had on people (or animals, when human studies are unavailable). Comparisons between site-specific concentrations and concentrations reported in past studies help the Navy to determine which contaminants are most likely to pose the greatest threat to human health.

In Step 2, the Navy considers the different ways that people might be exposed to the contaminants identified in Step 1, the concentrations that people might be exposed to, and the potential frequency and duration of exposure. Using this information, EPA calculates a **“reasonable maximum exposure” (RME)** scenario that portrays the highest level of human exposure that reasonably could be expected to occur.

In Step 3, the Navy uses the information from Step 2, combined with information on the toxicity of each chemical, to assess potential health risks. The Navy considers two types of risk: cancer risk and non-cancer risk. The likelihood of any kind of cancer resulting from a site is generally expressed as an upper-bound probability, for example, a “1 in 10,000 chance.” In other words, for every 10,000 people that could be exposed, one extra cancer may occur as a result of exposure to site contaminants. An extra cancer case means that one more person could get cancer than would normally be expected to from all other causes. For non-cancer health effects, the Navy calculates a “**hazard index (HI)**.” The HI is the ratio of the estimated exposure of an individual to a contaminant to the RME, the statistically derived exposure level at which no adverse effects occur. The key concept here is that a “threshold level” (measured usually as an HI of less than 1) exists, below which non-cancer health effects are no longer predicted.

In Step 4, the Navy determines whether site risks are great enough to cause health problems for people at or near the site. The results of the three previous steps are combined, evaluated, and summarized. The Navy adds together the potential risks from the individual contaminants to calculate the total risk resulting from the site.

Figure 4 - Pilot Study Area, Area of Attainment, and Conceptual Design of Alternative 2

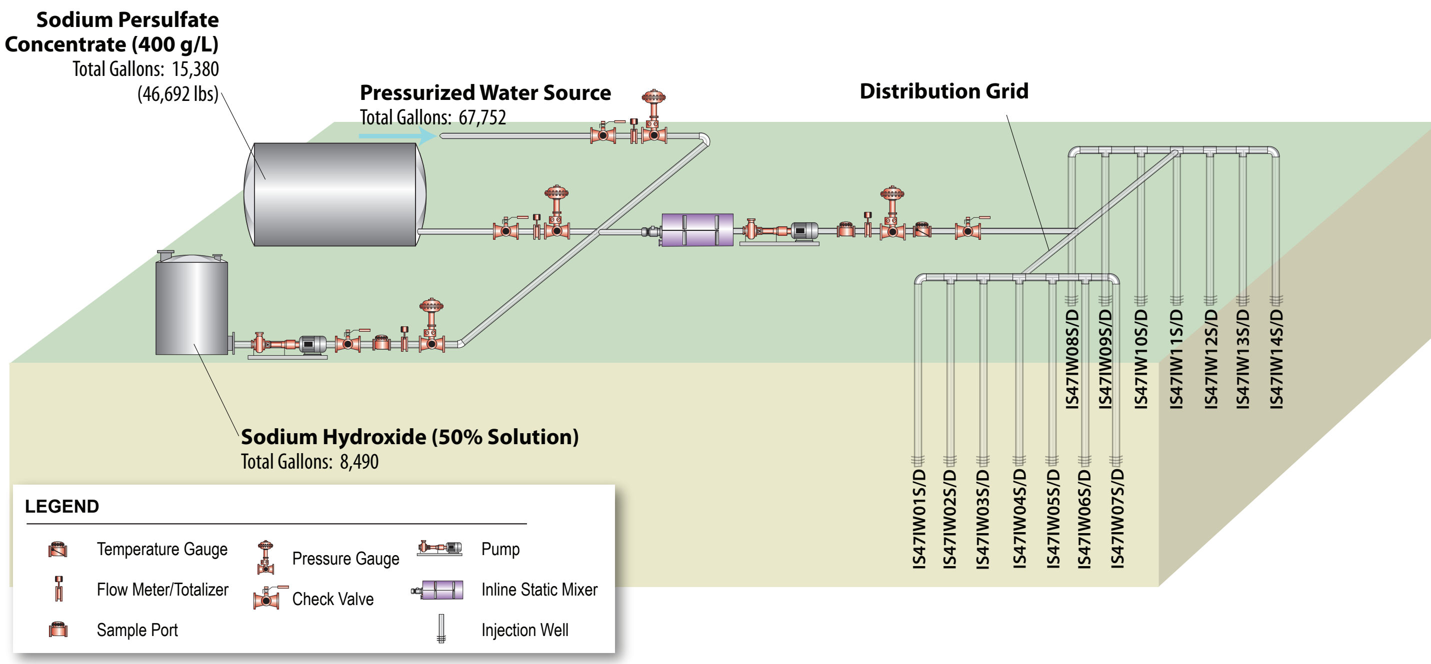


Figure 5 - ISCO Pilot Study Process Flow Diagram

The risk assessment concluded that exposure to surface soil may pose an RME noncarcinogenic risk slightly above EPA's acceptable HI level of 1 to the adolescent trespasser/visitor (HI = 1.2). However, there were no individual target organs/effects with an HI above 1, indicating the noncarcinogenic hazard to the adolescent trespasser/visitor is within acceptable EPA risk levels. Additionally, the central tendency exposure (CTE) noncarcinogenic hazard is within acceptable EPA hazard levels. Surface soil does not pose an unacceptable RME **carcinogenic** risk to the adolescent trespassers/visitors; this means that the calculated carcinogenic risk did not exceed the EPA's acceptable cancer risk range of 1×10^{-4} to 1×10^{-6}. Under current and anticipated future site use conditions, surface soil does not pose an unacceptable RME noncarcinogenic or carcinogenic risk to the industrial worker.

- Combined Surface and Subsurface Soil: For future uses – construction worker, industrial worker, child resident, and adult resident

  The HHRA evaluated exposure to combined surface and subsurface soil via ingestion, dermal contact, and inhalation of volatile and particulate emissions from soil. Combined soil does not pose an unacceptable RME noncarcinogenic risk to the construction worker or adult resident. RME risk estimates for exposure to combined soil indicated that the noncarcinogenic hazards associated with exposure for an industrial worker (HI = 1.4) and child resident (HI = 2.5) were above EPA's acceptable HI of 1. For both the industrial worker and child resident, the main contributors to the noncarcinogenic hazard are metals; however, there were no target organs with HIs above EPA's acceptable noncarcinogenic hazard level. Because the RME noncarcinogenic hazard for the industrial worker and child resident exceeded EPA's acceptable levels, CTE exposure risks were calculated. The CTE noncarcinogenic hazards were within EPA's acceptable levels for the industrial worker (HI = 0.03) and child resident (HI = 0.3). RME carcinogenic risks were within EPA's acceptable risk range for the construction worker, industrial worker, and lifetime resident.

Surface Water and Sediment

The risk assessment initially screened the maximum detected concentration of each constituent in surface water against 10 times its respective EPA Region III tap water RBC and the maximum detected concentration of each constituent in sediment against 10 times its respective EPA Region III residential soil RBC to identify the COPCs. Potential risks associated with exposure to the COPCs were estimated for the receptors identified below:

- For current and future uses – maintenance (other) worker and adolescent trespasser/visitor

  The HHRA evaluated exposure to surface water and sediment via ingestion and dermal contact. Under current and future land use conditions, the RME noncarcinogenic hazards and carcinogenic risks for surface water and sediment were all within EPA's acceptable risk levels for the maintenance (other) worker and adolescent trespasser/visitor.

Concrete

The risk assessment initially screened the maximum detected concentration of each constituent against its respective EPA Region III industrial soil RBC to identify the COPCs. Potential risks associated with exposure to the COPCs were estimated for the receptor identified below:

- For future uses – construction worker

  The HHRA evaluated exposure to concrete via ingestion, dermal contact, and inhalation of particulate emissions. Under future land use, the RME noncarcinogenic hazards and carcinogenic risks for the concrete trough were within EPA's acceptable risk levels for the construction worker.

Groundwater

This discussion is based on the results from the groundwater HHRA conducted during the pre-FS. The risk assessment initially screened the maximum detected concentration of each constituent against its respective EPA Region III residential tap water RBC to identify the COPCs. Potential risks associated with exposure to the COPCs were estimated for the receptors identified below:

- For future uses – construction worker, child resident, adult resident, and lifetime resident

  The HHRA evaluated exposure to groundwater via ingestion, and dermal contact and inhalation (adult only) while bathing by future adult and child residents, and via dermal contact and inhalation by future construction workers.

  The RI documented that the apparent source of groundwater contamination was in the vicinity of Building 856. Because the RI concluded that most, if not all, groundwater contamination at the site was near Building 856, this area was deemed to be the source of contamination. The HHRA included two separate evaluations: (1) to assess the overall human health risk posed by groundwater across the site and (2) to assess the residual human health risk posed by groundwater if the source area was eliminated by active treatment. The HHRA indicated that human health risks were present under both evaluations, and the Selected Remedy should include treatment to address the risk from the source area and the residual risk that would remain at the site after the source area has been eliminated.

<u>Full data set:</u> The RME and CTE noncarcinogenic hazards and carcinogenic risks for the evaluated future receptors are:

- Construction worker - The RME noncarcinogenic hazard (HI = 240) and the RME carcinogenic risk ($3x10^{-4}$) for the adult construction worker were above EPA's acceptable levels. The CTE noncarcinogenic hazard (HI = 206) and carcinogenic risk ($2x10^{-4}$) also were above the EPA levels. The noncarcinogenic hazards for both the RME and CTE scenarios were driven by dermal contact and inhalation of CT and CF. For both the RME and CTE scenarios, the cancer risks were driven by exposure to CT, CF, and PCE.
- Adult resident - Both RME (HI = 6,500) and CTE (HI = 980) noncarcinogenic hazards for the future adult resident were above EPA's target HI of 1. The main contributors to the risk were VOCs (CT, CF, 1,2-DCA, and PCE) and cyanide.
- Child resident – Both RME (HI = 4,200) and CTE (HI = 630) noncarcinogenic hazards were above EPA's acceptable risk level. The main contributors to the risk were VOCs (CT, CF, and PCE) and metals (arsenic, cyanide, iron, thallium, and vanadium).
- Lifetime resident - The RME ($2x10^{-1}$) and CTE ($1x10^{-2}$) carcinogenic risk were above EPA's risk range of $1x10^{-4}$ to $1x10^{-6}$. The main contributors to the risk were VOCs (benzene, CT, CF, 1,2-DCA, 1,1,2,2-tetrachloroethane (TCA), PCE, TCE, and vinyl chloride) and arsenic.

<u>Data set without source area:</u> The RME and CTE noncarcinogenic hazards and carcinogenic risks for the evaluated future receptors are:

- Construction worker - The RME noncarcinogenic hazard (HI = 53) was above EPA's acceptable hazard level of 1. The main contributor was inhalation of CT. The RME carcinogenic risk ($4x10^{-5}$) was within EPA's acceptable risk range. The CTE noncarcinogenic hazard (HI = 0.15) and carcinogenic risk ($5x10^{-7}$) were both below the EPA's target levels.
- Adult resident - The RME noncarcinogenic hazard (HI = 40) was above EPA's acceptable hazard level. The main contributors to the hazard were cyanide, arsenic, and thallium. The CTE noncarcinogenic hazard (HI = 3.2) was above EPA's level. The main contributor to the risk was to cyanide.
- Child resident - The RME noncarcinogenic hazard (HI = 90) was above EPA's acceptable level. The main contributors to the hazard were arsenic, cyanide, iron, manganese, and thallium. The CTE noncarcinogenic hazard (HI = 8.9) was above EPA's acceptable level. The main contributors to the hazard were cyanide and thallium.

- Lifetime resident - The RME carcinogenic risk ($2x10^{-3}$) was above EPA's acceptable risk range. The main contributors to the risk were PCE and arsenic. The CTE carcinogenic risk ($1x10^{-4}$) is at the high end of EPA's acceptable risk range.

Ecological Risk Assessment

As part of the RI, a **screening ecological risk assessment (SERA)** was conducted for surface soil, sediment, and surface water at Site 47 to estimate the risks the site would pose to **ecological receptors** if no action were taken. The SERA provided a conservative assessment of potential ecological risk. The general approach and site-specific approach for the ecological risk assessment are discussed in Section 9 in the RI report (CH2M HILL, 2003). The SERA concluded that several metals and PAHs in surface soil posed potential risk to ecological receptors, two metals (mercury and silver), and phenanthrene (a PAH) in sediment and metals in surface water posed potential risk to aquatic organisms. Potential risk from chemicals in groundwater was not directly assessed in the SERA because there is no direct exposure pathway to groundwater. Groundwater could discharge to the drainage ditch, so potential risks from groundwater were evaluated indirectly through the assessment of sediment and surface water risks.

The risk estimates for the COPCs identified in the SERA were refined in the BERA. The methodology and results are discussed in the BERA report (CH2M HILL, 2006). The BERA concluded that there were no unacceptable site-related risks associated with the soil, sediment, and surface water at Site 47. The ecological risk assessment process is explained in the box on this page.

Basis for Action

It is the Navy and EPA's current judgment that the preferred alternative identified in this Proposed Plan is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

Remedial Action Objectives

The site-specific **Remedial Action Objectives (RAOs)** for shallow groundwater at Site 47 are:

- Prevent unacceptable risks to human receptors from exposure to contaminants in the shallow groundwater.
- Prevent migration of the contaminants in the shallow groundwater at unacceptable concentrations (above SRGs) from Site 47 to uncontaminated media.
- Return the shallow groundwater to its beneficial use designation to the extent practicable.

WHAT IS ECOLOGICAL RISK AND HOW IS IT CALCULATED?

An ecological risk assessment evaluates the potential adverse effects that human activities have on the plants and animals that make up ecosystems. The ecological risk assessment process follows a phased approach similar to that of the human health risk assessment. The risk assessment results are used to help identify what measures, if any, are necessary to protect plants and animals.

Ecological risk assessment includes three steps:

Step 1: Problem Formulation

The problem formulation includes:

- Identifying area(s) and environmental media (e.g., surface water, soil, sediment) in which site-related constituents may be present
- Evaluating potential transport pathways (i.e., movement) of constituents in these areas/media
- Consideration of site-specific habitat information for identification of ecological receptors
- Identifying exposure pathways and routes for these receptors

Step 2: Risk Analysis

In the risk analysis, potential exposures to plants and animals are estimated and the concentrations of chemicals at which an effect may occur are evaluated.

Step 3: Risk Characterization

The risk characterization uses all of the information identified in the first two steps to estimate the risk to plants and animals. This step also includes an evaluation of the uncertainties (potential degree of error) associated with the predicted risk evaluation and their effects on the conclusions that have been made.

To achieve the RAOs, **preliminary remediation goals (PRGs)**, and subsequently SRGs were developed for the COCs in groundwater. PRGs were calculated for potential future residents (adult, child, and lifetime) and construction worker, although it is unlikely that the site will become a residential area. The PRGs were then compared to the facility-wide background concentrations and **maximum contaminant levels (MCLs)** for all COCs to determine the SRGs. Although shallow groundwater at Site 47 would likely not be used as a potable water source, only residential potable PRGs were used in determining the SRGs for Site 47 shallow groundwater. To be conservative, the PRGs for the construction worker scenario were not carried forward to the SRG determination. Because an MCL is not available for TCA, a health advisory value equivalent to a concentration at $1x10^{-4}$ cancer risk was used. The SRGs were identified based on the greatest concentration among the site-specific residential PRGs, facility-wide background concentrations (95 UCL), and State of Maryland or federal groundwater MCLs.

Although SRGs were established for all COCs, groundwater remediation will target only those COCs whose maximum detected concentration exceeded the SRGs. Based on this condition, all COCs would become targets for remediation except vinyl chloride. Also, remediation of 1,1,2,2-TCA and carbon disulfide would likely be required in the hot spot or source area only. **Table 1** presents the SRGs for each of the FS COCs. Section 3.4 of the FS report discusses how the SRGs for Site 47 were developed for the COCs in groundwater.

Table 1 – Summary of SRGs

COCs Requiring Remediation	SRG (µg/L)	Basis
Carbon disulfide	1,324	Residential PRG
CT	5	MCL
Chloroform	80	MCL
1,2-DCA	5	MCL
cis-1,2-DCE	72	Residential PRG
1,1,2,2-TCA	20	Health Advisory Value
PCE	5	MCL
TCE	5	MCL
Arsenic	10	MCL
Iron	49,869	Background
Thallium	2	MCL
Vanadium	20.9	Background

The area where SRGs are exceeded is defined as the area of attainment (AA). For the shallow groundwater at Site 47, one AA was identified, which consists of a source area and dissolved plume area. Figure 4 and Table 2 show the extent of the AA and the estimated area and volume of the total AA, source area, and the inferred residual DNAPL area.

Table 2 – Details of Area of Attainment

Component of AA	Area (square feet/acre)	Bulk / Groundwater (cubic feet/gallons)
Total AA	215,400 / 4.94	2.6 million / 5.8 million
Source Area	12,541 / 0.19	74,603 / 167,421
Inferred Residual DNAPL Area	2,075 / 0.05	6,350 / 14,250

Summary of Remedial Alternatives

Two remedial alternatives were developed for the AA, which are summarized below.

Alternative 1 – No Action

This alternative is required by the NCP as a baseline. Under this alternative, no remediation or action is planned. Table 3 summarizes the estimated cost for Alternative 1.

Table 3 – Estimated Cost for Alternative 1

Alternative 1 - Estimated Cost	
2011 Capital Cost	$0
2011 Total Operation & Maintenance (O&M) Cost	$0
Total O&M Present Worth	$0
Total Present-Worth Cost	$0
Projected Timeframe to Achieve RAOs	RAOs will not be achieved

Alternative 2 – Source Area Treatment using ISCO, MNA and ICs

Alternative 2 uses ISCO technology to treat the source area, MNA for the dissolved plume outside the source area and as the polishing step in the source area after ISCO treatment, and ICs prohibiting residential development at the site and any use of the shallow groundwater until the SRGs are met, and restricting intrusive activities such as excavation. Table 4 summarizes the estimated cost for Alternative 2. The components of this alternative are as follows:

- Implementing ISCO using AAP in the source area where CT and PCE are greater than 500 µg/L
- Using natural attenuation processes for the remaining dissolved plume and the source area following the active treatment with AAP.
- Conducting short-term ISCO performance sampling events at baseline and 2-, 6-, and 9-month post-ISCO events.
- Conducting long-term groundwater monitoring for 52 years. The long-term monitoring program would consist of performance monitoring of the ISCO within the source area during the first 2 years, and MNA for the remaining 50 years. The cost estimate assumed that the groundwater monitoring would be conducted on a quarterly basis from year 1 to year 3, and annually from year 4 to year 52.
- Conduct 5-year reviews until SRGs are met.
- Enforcing ICs in the form of land and groundwater use restrictions. Also, any future building construction would require an evaluation of potential human health risks from vapor intrusion. The site would be designated as a "restricted use" area in the NSF-IH system, which would remain in place until groundwater monitoring indicates that the SRGs have been met. This designation would place restrictions on intrusive activities such as excavation, and prohibit residential development and any use of the shallow groundwater. The IC area encompasses the AA, which is depicted in Figure 4. The requirements of the ICs will be integrated into the Comprehensive Work Approval Process (CWAP) system and made into one of the criteria in the CWAP approval for any future work at the site. The ICs will remain in effect as long as contaminants remain at the site at levels that do not allow for unlimited use and unrestricted exposure.

Table 5

Criteria	Alternative 1	Alternative 2
Overall Protectiveness of Human Health and the Environment	❍	●
Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)	NA	●
Long-Term Effectiveness and Permanence	❍	●
Reduction of Toxicity, Mobility or Volume Through Treatment	❍	●
Short-Term Effectiveness	❍	●
Implementability	●	●
Cost (Millions)[1]	$0	$5.69
State/Support Agency Acceptance	❍	●
Community Acceptance	To Be Determined	To Be Determined

Ranking: ● Satisfies criterion ⭘ Partially satisfies criterion ❍ Does not satisfy criterion
Alternative 1 – No Action
Alternative 2 – Source Area Treatment Using ISCO, MNA, and ICs
NA – Not Applicable
1 – Cost is the total present-worth value ($Million); Cost accuracy ranges from -30% to +50%.

Table 4 – Estimated Cost for Alternative 2

Alternative 2 - Estimated Cost	
2011 Capital Cost	$3.91 million
2011 Total O&M Cost	$4.22 million
Total O&M Present Worth	$1.78 million
Total Present-Worth Cost	$5.69 million
Projected Timeframe to Achieve RAOs	52 years

Evaluation of Remedial Alternatives

The NCP outlines the approach for comparing remedial alternatives. Remedial alternatives are evaluated using **nine evaluation criteria** to compare the relative performance of the alternatives and identify their advantages and disadvantages. The criteria are:

1. Overall protection of human health and the environment
2. Compliance with **Applicable or Relevant and Appropriate Requirements (ARARs)**
3. Long-term effectiveness and permanence
4. Reduction of toxicity, mobility, and volume
5. Short-term effectiveness
6. Implementability
7. Cost
8. State acceptance
9. Community acceptance

The FS provides a detailed analysis and evaluation of the remedial alternatives based on criteria 1 through 7. Criteria 8 and 9 will be evaluated after receipt of the public's comments on this Proposed Plan during the 30-day comment period. Table 5 summarizes how each alternative satisfies each criterion on its own merit. The following text provides further evaluation of the alternatives compared to each other.

Alternative 2 was selected as the preferred remedial alternative over Alternative 1 because it is protective of human health and the environment, complies with the site-specific ARARs, achieves long-term effectiveness and permanence, and will reduce the toxicity, mobility, or volume of contaminants through treatment. Alternative 2 offers adequate protection of human health and the environment through active source treatment and implementation of ICs, while Alternative 1 offers no protection. Alternative 2 is projected to achieve the source treatment goal within 2 years and comply with SRGs in 52 years, bringing the alternative in compliance with the relevant location-, action-, and chemical-specific ARARs; Alternative 1 will be out of compliance with the SRGs for thousands of years. Alternative 2 significantly decreases the magnitude of residual risk within an acceptable time-frame. Although Alternative 2 may pose adverse short-term safety risk to remediation workers due to handling of high volumes of chemicals, the remedy aggressively reduces the toxicity, mobility, and volume of contamination through treatment. The short-term risks can be minimized and/or negated with proper safety training and controls. Alternative 2 is readily implementable at the site because it is a conventional remedy and has been used successfully at numerous other **National Priorities List (NPL)** sites. As shown in Table 4, the total present-worth cost of Alternative 2 is approximately $5.7M.

Preferred Remedial Alternatives

The Navy and EPA, with the support of MDE, are proposing to implement Alternative 2 as the final remedy; however, the preferred alternative can change in response to public comment or as a result of the receipt of new information. The preferred alternative uses ISCO technology to treat the source area, MNA for the dissolved plume outside the source area and as the polishing step in the source area after ISCO treatment, and ICs prohibiting any use of the shallow groundwater over the entire AA until the SRGs are met. The preferred remedy adequately addresses the principal threat at Site 47, which is the potential presence of CT and PCE at DNAPL concentrations in the shallow groundwater. The RAOs for Site 47 were developed to address the principal threat by preventing unacceptable risk from exposure to contaminants, preventing migration to uncontaminated media, and returning the shallow groundwater to its beneficial use designation to the extent practicable. Furthermore, Alternative 2 was selected as the preferred remedial alternative over Alternative 1 because it is protective of human health and the environment, complies with the site-specific ARARs, achieves long-term effectiveness and permanence, and will reduce the toxicity, mobility, or volume of contaminants through treatment.

Figure 4 shows the conceptual design of the source area treatment for Alternative 2. The components of this remedial alternative will be refined or modified when the detailed design of the injection and its auxiliary activities, as well as the performance monitoring plan, are prepared after the ROD is signed.

Community Participation

The Navy and EPA provide information regarding the cleanup of NSF-IH to the public through public meetings, the Administrative Record File for the site, the **Information Repository**, and announcements published in the southern Maryland newspapers. The Navy and EPA encourage the public to gain a more comprehensive understanding of the site and the CERCLA activities that have been conducted at the site.

The public comment period provides the public time to review and comment on the information provided in this Proposed Plan. The 30-day public comment period for this Proposed Plan is April 12, 2012 through May 14, 2012. The public meeting will be held on April 12, 2012, from 6:00 P.M. to 7:00 P.M. at the Indian Head Senior Center, 100 Cornwallis Square, Indian Head, Maryland. The location of the Administrative Record and Information Repository are provided on page 1 of this Proposed Plan.

Minutes of the public meeting will be included in the Administrative Record file. All comments received during the public meeting and comment period will be summarized, and responses will be provided in the **Responsiveness Summary** section of the ROD. The ROD is the document that will present the selected remedy and will be included in the Administrative Record file.

Written comments can be submitted via mail, e-mail, or fax, and should be sent to the following addressee:

Naval Support Activity South Potomac
Attn: Public Affairs Officer, Code 00P
6509 Sampson Rd. Suite 217
Dahlgren, VA 22448-5108
(540) 653-8153 or Toll-free (866) 359-5540

For further information, please contact:

Mr. Nicholas Carros – Installation Restoration Program Manager
Naval Support Facility, Indian Head
Environmental Program Office (Building 554)
3972 Ward Road, Suite 101
Indian Head, MD 20640-5157
Phone: 301-744-2263
Fax: 301-744-4180
Email: nicholas.carros@navy.mil

Mr. Joe Rail – Remedial Project Manager
Naval Facilities Engineering Command Washington
1314 Harwood St. SE
Washington Navy Yard, DC 20374-5018
Phone: 202-685-3105
FAX: 202-685-3350
Email: joseph.rail@navy.mil

Mr. Nathan Delong – Remedial Project Manager
Naval Facilities Engineering Command Washington
1314 Harwood St. SE
Washington Navy Yard, DC 20374-5018
Phone: 202-685-3279
FAX: 202-685-3350
Email: nathan.delong@navy.mil

Mr. Dennis Orenshaw – Remedial Project Manager
U.S. Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, PA 19103-2029
Phone: 215-814-3361
FAX: 215-814-3051
Email: orenshaw.dennis@epamail.epa.gov

Mr. Curtis DeTore – Remedial Project Manager
Maryland Department of the Environment
1800 Washington Blvd., Suite 645
Baltimore, MD 21230-1719
Phone: 410-537-3344
FAX: 410-537-4133
Email: cdetore@mde.state.md.us

References

CH2M HILL. 2003. *Final Remedial Investigation, Site 47 – Mercuric Nitrate Disposal Site, Indian Head, Maryland.*

CH2M HILL. 2006. *Final Site 47 Baseline Ecological Risk Assessment, Naval Support Facility, Indian Head, Indian Head, Maryland.*

CH2M HILL. 2008. *Final Site 47 Groundwater Feasibility Study, Naval Support Facility, Indian Head, Indian Head, Maryland.*

CH2M HILL. 2011. *Site 47 In situ Chemical Oxidation Pilot Study Technology Performance Evaluation, Naval Support Facility, Indian Head, Indian Head, Maryland.*

Ensafe/Allen & Hoshall. 1994. *Final Site Inspection Report Phase II, Indian Head Division, Naval Surface Warfare Center.*

NEESA. 1992. *Preliminary Assessment Report. Naval Ordnance Station Indian Head, Maryland.*

Navy. 2006. *Navy Environmental Restoration Program Manual.*

Tetra Tech. 2002. *Background Soil Investigation Report for Indian Head and Stump Neck Annex, Naval Surface Warfare Center, Indian Head Maryland.*

Glossary of Terms

Administrative Record File: A record made available to the public that includes all information considered and relied on in selecting a remedy for a site.

Applicable or Relevant and Appropriate Requirements (ARARs): A comprehensive set of state and federal laws and regulations that are relevant to guiding the selection of remediation at a CERCLA (see below) site.

Background: Area not affected by facility or site activities.

Baseline Ecological Risk Assessment (BERA): BERAs are used to estimate whether current or future chemical exposures will pose risks to the site ecological community. A site BERA is more complex than a site SERA and occurs after SERA has been completed.

Carcinogenic: Causing or inciting cancer.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA): A federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act of 1986 (SARA). CERCLA provides the authority and procedures for responding to releases of hazardous substances, pollutants, and contaminants from inactive hazardous waste disposal sites.

Comment Period: A time for the public to review and comment on various documents and actions taken, either by the Navy, EPA, or MDE. A minimum 30-day comment period is held to allow community members to review the Administrative Record file and review and comment on the Proposed Plan.

Contaminants of Concern (COCs): COCs are the site-specific chemical substances that have been determined to cause potential unacceptable health effects and are the target of remediation. COCs contribute a carcinogenic risk greater than 10^{-6} to a cumulative carcinogenic risk greater than 10^{-4}, or a non-cancer hazard greater than 0.1 to a cumulative non-cancer hazard greater than 1.0.

Contaminants of Potential Concern (COPCs): COPCs are the preliminary site-specific chemical substances that have been generated through the risk screening process, and have been selected for further evaluation of potential health effects. Identifying a COPC as a COC is an iterative process that requires a health assessor to examine contaminant concentrations at the site, the quality of environmental sampling data, and the potential for human exposure and toxicity.

Dense Non-Aqueous Phase Liquid (DNAPL): A liquid that is denser than water and does not dissolve or mix easily in water.

Direct-Push Technology (DPT): A category of equipment that pushes or drives steel rods into the ground. This technology allows cost-effective, rapid sampling and data collection from unconsolidated soils and sediments.

Ecological Receptors: Non-human plant or animal species that may be exposed to site contaminants.

Electrical Conductivity (EC): A measure of a material's ability to conduct an electric current.

Feasibility Study (FS): An analysis of the appropriateness, efficacy, feasibility, and cost of potential remedial options or cleanup alternatives for a site.

Groundwater: Water beneath the ground surface that fills pore spaces between materials such as sand, soil, or gravel to the point of saturation. In aquifers, groundwater occurs in quantities sufficient for drinking water, irrigation, and other uses. Groundwater may transport substances that have percolated downward from the ground surface as it flows towards its point of discharge.

Hazard Index (HI): The sum of the ratios of the daily intake of chemicals from onsite exposure divided by the reference doses for those chemicals. The reference dose represents the daily intake of a chemical not expected to cause adverse health effects. Therefore, an HI of 1 means that the amount of site contaminants to which a receptor is exposed is equivalent to the amount not expected to cause adverse health effects.

Human Health Risk Assessment (HHRA): Used to estimate whether current or future chemical exposures will pose health risks to individuals or a broad population.

Information Repository: A file containing information, technical reports, and reference documents regarding a National Priorities List (NPL; see below) site. This file is usually maintained in a place with easy public access, such as a public library.

Inorganic: Compounds considered to be of mineral, not biological, origin.

***In Situ* Chemical Oxidation (ISCO):** The introduction of a chemical oxidant into the subsurface for the purpose of transforming groundwater or soil contaminants into less- harmful chemical species.

Institutional Control (IC): A legal or administrative action or requirement imposed on a property to limit or prevent property owners or other people from coming into contact with contamination on the property. ICs may be used to supplement a cleanup (by limiting contact with residual contamination), or may be used instead of conducting a cleanup. Examples include deed notices, deed restrictions, and long-term site monitoring or site security requirements.

Maximum Contaminant Level (MCL): Standards set by EPA in Title 40 of the Code of Federal Regulations for drinking water quality. An MCL is the highest level of a contaminant that is allowed in drinking water under the Safe Drinking Water Act.

Membrane Interface Probe (MIP): A screening tool with semi-quantitative capabilities, acting as an interface between the contaminants in the subsurface and gas phase detectors at the surface.

Monitored Natural Attenuation (MNA): Natural attenuation relies on natural processes (for example, microbial action, adsorption, absorption, dilution, evaporation) to clean up or attenuate pollution in soil and groundwater. The right conditions must exist underground to clean sites properly, and scientists *monitor* or test these conditions to make sure natural attenuation is working.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): The organizational structure and procedures for preparing and responding to discharges of oil and releases of hazardous substances, pollutants, or contaminants.

National Priorities List (NPL): EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial response. The list is based, primarily, on the score a site receives on the Hazard Ranking System. EPA is required to update the NPL at least once a year.

Nine Evaluation Criteria: Criteria used by EPA at all Superfund sites to evaluate remediation alternatives and select a preferred alternative to be presented in a Proposed Plan.

Preliminary Remediation Goals (PRGs): Used for risk assessment and decision making at CERCLA sites. PRGs are upper concentration limits for specific chemicals in specific environmental media that are anticipated to protect human health or the environment.

Proposed Plan: A public participation requirement of SARA in which the lead agency summarizes the preferred cleanup strategy and rationale for the public. This agency also reviews the alternatives presented in the detailed analysis of the FS. The Proposed Plan may be prepared either as a fact sheet or as a separate document. In either case, it must actively solicit public review and comment on all alternatives under consideration.

Reasonable Maximum Exposure: RME describes the exposure of individuals who are at the high end of the exposure distribution (approximately the 95th percentile). The RME scenario is intended to assess exposures that are higher than average, but are still within a realistic range of exposure.

Record of Decision (ROD): An official public document that explains which cleanup alternative(s) will be used at an NPL site. The ROD is based on information and technical analysis generated during the RI/FS and consideration of public comments and community concerns. The ROD explains the remedy selection process and is issued by the lead agency following the public comment period.

Remedial Action Objectives (RAOs): RAOs describe what the proposed site cleanup is expected to accomplish. These objectives typically serve as the design basis for the remedial alternatives.

Remedial Investigation (RI): An in-depth study designed to gather data needed to determine the nature and extent of contamination at a Superfund site, establish site cleanup criteria, identify preliminary alternatives for response action, and support technical and cost analyses of alternatives.

Response Action: As defined by Section 101(25) of CERCLA, a removal, remedy, or response action, including related enforcement activities.

Responsiveness Summary: A summary of oral and written public comments received by the lead agency during a comment period and the responses to these comments prepared by the lead agency. The responsiveness summary is an important part of the ROD, highlighting community concerns for decision makers.

Risk-Base Concentration (RBC): A conservative screening chemical-specific value that is protective of human health. RBCs are used to identify contaminants of potential concern.

Screening-Level Ecological Risk Assessment (SERA): SERAs involve chemical toxicity evaluations, exposure estimates, and risk calculations for a site's ecological community.

Semi-volatile Organic Compound (SVOC): An organic compound that has a boiling point higher than water and that may vaporize when exposed to temperatures above room temperatures. SVOCs include phenols and PAHs.

Site Remediation Goals (SRGs): The concentration levels of constituents in a particular medium that are established to be protective of human health and the environment.

Superfund: The program operated under the legislative authority of CERCLA and SARA that funds and carries out EPA solid waste emergency and long-term removal and remedial activities. These activities include establishing the National Priorities List, investigating sites for inclusion on the list, determining their priority, and conducting and/or supervising the cleanup and other remedial actions.

Target Analyte List (TAL): A list originally derived from the EPA Priority Pollutant List. In the years since the inception of EPA's Contract Laboratory Program, compounds and analytes have been added to and deleted from this list, based on advances in analytical methods, evaluation of method performance data, and the needs of the Superfund program.

Target Compound List (TCL): A list originally derived from the EPA Priority Pollutant List. In the years since the inception of the Contract Laboratory Program, compounds and analytes have been added to and deleted from this list, based on advances in analytical methods, evaluation of method performance data, and the needs of the Superfund program.

Upper Confidence Limit: Value of the upper end of the confidence interval, the region of the sample mean that is likely to be representative of site-specific conditions.

Volatile Organic Compounds (VOCs): Naturally occurring or manmade chemicals containing carbon. Volatile organics can evaporate more quickly than SVOCs.

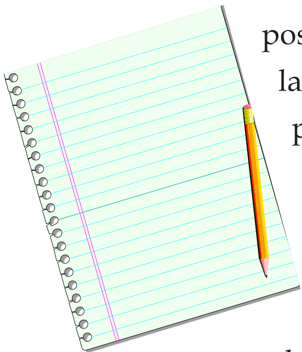
Please print or type your comments for Site 47 here

Mark Your Calendar for the Public Comment Period

Public Comment Period

April 12, 2012 through May 14, 2012

Submit Written Comments



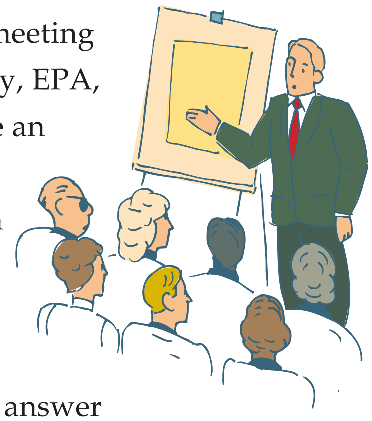
Written comments must be postmarked no later than the last day of the public comment period, which is May 14, 2012. Based on the public comments or on any new information obtained, the Navy may modify the Preferred Alternative.

The insert of this Proposed Plan may be used to provide comments, although the use of the form is not required. If the form is used to submit comments, please fold page, seal, add postage where indicated, and mail to addressee as provided.

Attend the Public Meeting

April 12, 2012, from 6:00 P.M. to 7:00 P.M.

Indian Head Senior Center
100 Cornwallis Square
Indian Head, MD 20640



The public comment period will include a public meeting during which the Navy, EPA, and MDE will provide an overview of the site, previous investigation findings, remedial alternatives evaluated and the Preferred Alternative; answer questions; and accept public comments on the Proposed Plan.

FOLD HERE

____

____

____

Place stamp here

Public Affairs Officer
Naval Support Activity South Potomac
Attn: Public Affairs Officer, Code 00P
6509 Sampson Rd., Suite 217
Dahlgren, VA 22448-5108
(540) 653-8153 or
Toll Free (866) 359-5540